

Durham Research Online

Deposited in DRO:

07 September 2016

Version of attached file:

Accepted Version

Peer-review status of attached file:

Peer-reviewed

Citation for published item:

Coningham, R.A.E. and Acharya, K.P. and Davis, C.E. and Manuel, M.J. and Kunwar, R.B. and Hale, D. and Tremblay, J. and Gautam, D. and Mirnig, N. (2016) 'Exploring ancient Pashupati : preliminary results of archaeological surveys and excavations at Bhandarkhal, Kathmandu Valley UNESCO World Heritage Property (Nepal).', Ancient Nepal., 191-192 . pp. 93-112.

Further information on publisher's website:

<http://doa.gov.np/downloads.php?id=22>

Publisher's copyright statement:

Additional information:

Use policy

The full-text may be used and/or reproduced, and given to third parties in any format or medium, without prior permission or charge, for personal research or study, educational, or not-for-profit purposes provided that:

- a full bibliographic reference is made to the original source
- a [link](#) is made to the metadata record in DRO
- the full-text is not changed in any way

The full-text must not be sold in any format or medium without the formal permission of the copyright holders.

Please consult the [full DRO policy](#) for further details.

Exploring Ancient Pashupati: Preliminary Results of Archaeological Surveys and Excavations at Bhandarkhal, Kathmandu Valley UNESCO World Heritage Property (Nepal)

Coningham, R.A.E.¹, Acharya, K.P.², Davis, C.E.¹, Manuel, M.J.¹, Kunwar, R.B.³, Hale, D.¹, Tremblay, J.¹, Gautam, D.¹ and Mirnig, N.⁴

¹ Department of Archaeology, Durham University, DH1 3LE, UK

² Former Director-General of Archaeology, Department of Archaeology, Government of Nepal, Kathmandu, Nepal

³ Department of Archaeology, Government of Nepal, Kathmandu, Nepal

⁴ Institute of Cultural and Intellectual History of Asia, Austrian Academy of Science, Vienna

1. Introduction

Cultural heritage is threatened by increasing pilgrim numbers at major religious sites around the world, particularly in Asia. Pashupati, a UNESCO World Heritage Site in the Kathmandu Valley (Nepal), offers a microcosm of the impacts facing archaeology from these global developments, providing a case-study of heritage management for sustainable pilgrimage. Located within the historic city of Deopatan (Michaels and Tandon 1994: 180), Pashupati comprises a monumental core of temples, ashrams and funerary ghats covering 83 hectares along the Bagmati River (Figure 1). Receiving approximately six million pilgrims annually, Pashupati's status as major Shaivite site in South Asia and Nepal's premier cremation destination has led to tensions between development, religious practice and the protection of cultural heritage. In comparison with significant conservation of its eighteenth century temples, little has been done to evaluate Pashupati's subsurface archaeology and, as pilgrim numbers rise, pressure on infrastructure that accompanies development could pose a risk to heritage protection. This is of great concern as little is known of the potential and valuable subsurface heritage of this site of Outstanding Universal Value.

2. Archaeological Investigations in the Kathmandu Valley and Pashupati

Few excavations have been targeted at identifying earlier occupation at archaeological sites within the Kathmandu Valley despite the very real threat to their survival from rapid urbanisation and associated pressures. Archaeological excavations have been conducted at Harigaon (Veradi 1992) and at Dumakhal (Khanal and Riccardi 2007) but both these excavations were generally limited by their focus on monumental brick architecture. Furthermore, excavations of Patukadwon in Patan, traditionally thought to be the site of the Kirati Palace (TPU 2003a, TPU 2003b), are yet to be fully published. More recently, the Gorkha earthquake of 2015 has led to post-disaster and rescue archaeological assessments across the major Durbar Squares of Patan (Coningham et al. 2016a), Hanuman Dhoka (Coningham et al. 2016b) and Bhaktapur (Coningham et al. 2016c) in addition to pilot excavations at collapsed monuments. However, these investigations are in their infancy and the general focus of previous studies at the major monumental complexes has been towards standing architectural remains (e.g. Basukala et al. 2014, Gutschow 1997 and 2011, Hutt 1994, Korn 2007 and 2014) rather than sub-surface heritage and this situation is mirrored at Pashupati.

Although Pashupati's later medieval architecture is well documented (Michaels and Tandon 1994), little is known of the presence or nature of earlier cultural phases, with a paucity of archaeological evidence for the site's beginnings and early religious activities (Mirnig 2013: 326). Previous excavations elsewhere in the Kathmandu Valley have identified the possibility of the existence of subsurface features, such as at Harigaon (Veradi 1992), although a systematic scientific dating programme of archaeological sequences has never been fully realised for this region. Furthermore, recent excavations in the Natal landscape of the Buddha at Lumbini and Tilaurakot have uncovered pre-brick structures below standing remains (Coningham *et al.* 2013a, Coningham et al. 2016d, Davis et al. 2016, Strickland et al. 2016), suggesting that non-durable buildings were succeeded by more monumental architecture. Such a scenario is likely in the Kathmandu Valley as local Chronicles state that Pashupati was first constructed in the third century BCE and the presence of fourth to ninth centuries CE Licchavi inscriptions (Amatya 2011, Joshi 1974, Regmi 1983, Michaels 2008, Mirnig 2013, Tiwari 2001) suggest a deep sequence, significantly earlier than the present eighteenth century standing remains. Such a sequence is of great importance in understanding the development of the site before and after the emergence of Pashupati as the tutelary deity of Nepalese kings and the introduction of concepts of 'Indic' divine kingship from the sixth century CE onwards (Mirnig 2013).

On account of planned improvements to the wooded park known as Bhandarkhal, the Pashupati Area Development Trust (PADT) and Department of Archaeology, Government of Nepal, invited the team to focus their primary activities in that area. Bhandarkhal, meaning 'Treasury Garden' is a walled compound west of the main Pashupati Temple complex, south of the Jayabageshwari Temple and west of Gausala (Figure 2). Close to watershed dividing

the Bagmati from its tributary, the Dhobi Khola, it forms rough rectangle measuring 300 metres along its northern edge, 250 on its southern, 260 on its eastern and 330 metres on its western. One of the parks and gardens that break up the urban sprawl of Deopatan, these spaces were thought to have been endowed in order for devotees and pilgrims to offer the gods of Pashupati with flowers regularly. A number of scholars attribute the formal laying out of Bhandarkhal to the rule of King Pratapa Malla (r. 1641-1674 CE) and record that it was later enclosed within a wall by King Rana Bahadur Shah (r. 1777-1799 CE) (Michaels 2008: 6)(Hutt :1995: 180). According to Slusser, Rana Bahadur Shah donated the entire garden to the temple at Pashupati in the nineteenth century (1982: 230). However, the rich corpus of Licchavi inscriptions across Deopatan suggests that western hillside above the temple complex was already densely occupied by shrines and residences by the fifth century CE and some chronicles link the area to a visit by the Mauryan Emperor, Asoka (Regmi 1965: 8). Amatya has also drawn attention to the Licchavi and Malla tradition of the establishment of gardens and tanks in order to present fruit and flowers to presiding deities (2011: 10) and, as such, it is to be expected that there would be earlier activity in the vicinity of Bhandarkhal before Pratapa Malla's eighteenth century intervention.

Excavations were first conducted at Pashupati in 1990, and resumed in 1993, by Stefano Pracchia in Bhandarkhal (Di Castro 1997: 134). During these investigations, five trenches were excavated within Bhandarkhal but, as stated above, the full findings of these investigations were never published. However, preliminary results suggested that occupation in the area began as early as the first century CE on the basis of ceramics comparable with those found at Harigaon (ibid: 134). One major focus of these investigations was a depression located roughly in the centre of Bhandarkhal, which was interpreted as a monumental tank and attributed to the early Licchavi period on the basis of artefactual evidence. Across Bhandarkhal, Di Castro stated that three cultural horizons were identifiable. Based on his artefactual assemblage, he attributed the first to the first and third centuries CE, the second to between the fourth and ninth centuries CE and, finally, sporadic traces of occupation relating to the early Malla period, which caused the destruction of the two earlier structural phases (ibid: 134). However, the paucity publication and scientific dating leaves a lacuna of information regarding the origins and development of this part of Pashupati.

3. Surveying Bhandarkhal

Basic topographical mapping of Bhandarkhal was undertaken, allowing us to tie together the different elements of the project – geophysics, augering and excavation – into a single geographic database. This was followed in January 2014 and January 2015 by an archaeological geomagnetic survey using a Bartington Instruments Grad601-2 dual fluxgate gradiometer. The instrument sensitivity was nominally 0.03nT, the sample interval was 0.25

metre and the traverse interval was one metre, thus providing 1,600 sample measurements per 20 metre grid unit (3,600 sample measurements per 30 metre grid unit). Data were downloaded on site into a laptop computer for initial processing and storage and subsequently transferred to a desktop computer for processing, interpretation and archiving. Geoplot v.3 software was used to process the geophysical data and to produce continuous tone greyscale images of the raw (minimally processed) data. The area surveyed measured a maximum of 240 metres east-west and 140 metres north-south with a smaller area of 30 by 40 metres in the north-east corner of the area.

The main features identified by the survey were a number of linear positive and negative magnetic anomalies, generally aligned north-west/south-east. Typically weak and broad, it was thought that they could reflect soil-filled features such as ditches or trenches where wall footings have been robbed out and former paths or trackways. For example, the existing track through the park corresponds to a very weak, linear positive magnetic anomaly in the north-west of the survey area. Concentrations of small, strong dipolar magnetic anomalies were detected throughout the area but particularly in the north of the survey near the existing track. These almost certainly reflect ferrous and fired debris; deposits of fired bricks were noted on the ground during survey. A scatter of further small, discrete dipolar magnetic anomalies has been detected across the area. These reflect small items of ferrous and/or fired litter, probably associated with the current use of the park for coach parties, cooking and recreation. The detection of sub-surface features in the north-east was hindered by the presence of a large metal water tank in the centre of the area and its associated pipe, as well as wire fences and corrugated metal shelters for cattle along the eastern edge of the area, adjacent to the brick wall and coach park. A chain of intense dipolar magnetic anomalies which was detected along the southern edge of the survey area could reflect the presence of another service pipe (Figure 3 and 4).

We also sampled 92 auger cores in the Pashupati area in July 2014, with a number in Bhadarkhal (Figure 5). The success of auger coring in South Asia has been demonstrated in Anuradhapura, Sri Lanka (Coningham 1999: 49; Coningham and Gunawardhana 2013: 23), Lumbini and Tilaurakot in Nepal (Coningham and Acharya 2013; Coningham, Acharya and Manuel 2014) and Bangladesh (Coningham et al. 2013b), where its portability and ease of use allowed for rapid site assessment. Auger coring allows us to identify the depth and extent of cultural material as well as providing the ability to record general macro-stratigraphic details of the broader site. In all instances the auger cores were undertaken using an Eijkelkamp soil auger and were continued until bedrock or natural soil was reached. The cores were removed and analysed in 20 centimetre sections, with soil colour and consistency recorded along with mineral and cultural inclusions. Soil colour was judged using Munsell soil colour charts. The location of each auger was plotted using the total station. The Bhadarkhal augers were sampled on two east-west profiles (lines A and B) and two north-south profiles (lines C and D). Each auger profile consisted of ten augers located

20 metres apart from each other. Augers D1 and D2 were offset by about 40 metres to the east due to severe waterlogging of the north-west corner of the site.

Natural soil, unaltered by human activity, was reached in nearly all augers and consists of a yellowish-brown silty sand, containing pieces of degraded bedrock, mica and quartz. To the west, natural soil was quite shallow at 1.0 to 1.5 metres deep and as shallow as 0.7 metres in auger B2. In most areas, cultural material was evident throughout the auger-cores and was predominantly brick with some pottery. Augers C8 and C9 contain evidence of a river channel, due to the presence of a soft, sandy material containing small stones and gravel, underlying a short phase of natural. This matches the geophysical survey, which identified potential channels in this area. The deepest auger was C5, taken in the centre of the tank in Bhandarkhal. The top one metre was a brownish grey silty sand; from one metre to two metres depth was a coarse grey sand; from two metre to just over three metres was a greyish brown fine sand with evidence of iron panning, indicating stagnating water. Finally, from 3.2 metres to five metres down, was a compact black cotton soil – which may have been deliberately used to line the base of the tank as the soil is very good at retaining water, rather than allowing it to drain away.

4. Excavations in Bhandarkhal

Due to the potential of encountering structures and archaeological stratigraphies dating to the Licchavi period in Bhandarkhal, we decided to locate two trenches at the monumental tank during our first season of excavations in 2014. Trench 1 was located on the eastern edge of the tank and Trench 2 on its northern edge. Both trenches were excavated in order to define the tank edge and the developmental sequence of the tank. In 2016, Trench 3 was located in the south of Bhandarkhal in order to investigate features identified in geophysical survey of the area and also to gain an occupational sequence for the site to link to the evidence from the tank.

4.1 Trench 1 and Trench 2

Trench 1 was located close to the centre point of the eastern edge of the tank depression at Bhandarkhal. The trench originally measured eight metres east to west and one metre wide. This was later extended in the eastern four metres to a two metre wide slot, with a further one metre extension to the north running for three metres from one metre to the east of the trench. At the base of the sequence was a sterile, soft, sandy deposit that may have been the sandy tank infill or the natural soil. Rising to the east, two almost complete vessels were found nestled on the surface of this deposit. These vessels were relatively intact and may have been dropped into the waters of the tank from its edge, either by accident or as part of a ritual deposition. Above the sand was a soft silty sand containing brickbats and ceramics and this may represent the primary tank fill once the feature went

out of use and was no longer cleaned out. Cutting through this material and into the sterile sandy base of the tank was a large pit, with a rounded base, which contained three fills (Figure 6). The primary fill was a very soft sandy material with some ceramics and brick fragments. This fill may have been an early wash into the pit cut sealed by the secondary later infill. This secondary fill was silty and soft, also containing brickbats and ceramics. Finally, the tertiary fill was a soft sandy silt, again containing ceramics and brickbats. Capping the tertiary fill was an irregular brick topped surface. This discrete cluster of broken bricks, some placed on edge, appeared to form a small area of paving (Figure 7). This is possibly a deliberate attempt at creating a temporary platform forming a more solid footing for individuals utilising the tank edge for either ritual or utilitarian purposes. The bricks sat within a silty clay bonding material that contained smaller fragments of brick bat. Whilst the purpose of the pit is unclear, during our investigations we noted several depressions in the base of the cleared tank. Perhaps dug out for material to be used elsewhere, over time it is assumed that these pits filled with sediment from washes during periods of rains, such as monsoon.

Whilst we did not identify brick edging for the tank as is seen in the later medieval squares of Patan, Bhaktapur and Hanuman Dhoka, we did identify a firm, fairly sterile material that formed a stepped edge that rose to the east (Figure 8). Whilst we await the results of geoarchaeological analysis, we suggest that ponds and tanks with earthen edges may have preceded the brick-lined monuments that are synonymous with the Durbar Squares of the Kathmandu Valley. It is postulated that earthen cut tanks may have been a feature of Licchavi urban planning and were then later developed into monumental brick structures or, as at Bhandarkhal and Deopatan, fell into disuse or never gained the patronage for such a development with investment focused on the major monuments of Pashupati. The stepped edge was overlain by a soft silty sand, which contained ceramics and small fragments of brickbats, and this may be an infill and wash relating to the abandonment of this phase of tank.

The next phase of development in Trench 1 relates to the construction of a brick wall running north-south across the trench and to the east side of the trench. This wall sat in a foundation cut, which contained large fragments of pot within its fill. Badly robbed, the wall survived to seven courses in the south and two in the north. Initially thought to be a tank edge, the wall may relate to later occupation at the edge of the tank. It was associated with a clay surface, which may represent an occupation horizon. Overlying this wall, and running east-west was a narrow brick wall, measuring 0.40 metres wide, which may represent a buttress or railing on the edge of the tank (Figure 9). This balustrade was damaged and appeared to split towards the western slope of the tank but was also robbed out with a robber pit of loose rubble material including charcoal, brick and stone cut through it to the east.

The latest phases of the Trench related to several phases of ephemeral edging of brick and tile. Represented by linear features running north-south, it is suggested that these alignments may have been temporary tank edgings formed from rubble. A similar alignment on the northern edge of the tank led to the opening of Trench 2 (Figure 10). Trench 2 was originally a two by one metre trench opened over east-west running alignment of tile and brick, of which the upper surface was visible through the topsoil. Seemingly constructed from debris, there is again the potential that this alignment may represent an ephemeral edging to the tank, much like those identified in the upper surfaces of Trench 1. It may also relate to the consolidation of the tank edge in the later phases of occupation, perhaps relating to earthquake damage or a phase relating to squatter-like occupation of the site. The eastern half of this alignment was removed and a slot trench measuring six metres north to south and one metre east to west was excavated towards the centre of the tank down the slope of this monumental feature. This was later extended by a further one metre to the north, resulting in a seven metre long slot trench. Several other features were identified that bore a similarity to those in Trench 1. A narrow brick wall, constructed of at least seven courses of brick, ran north-south into the tank (Figure 11). This also may represent a balustrade/railing running from the tank edge and was sealed by several deposits and a brick paving, which in turn was found underneath the ephemeral tank edges. The base of the tank had a sterile sandy fill, like that in Trench 1 and several phases of infill were identified, which contained brickbat rubble as well as ceramic sherds (Figure 12).

All bulk undiagnostic brick, ceramics and tile from Trenches 1 and 2 were counted and weighed from all contexts excavated. Ceramic wares included Red Ware, Coarse ware, Black Ware and Red Slipped Ware and we are currently developing diagnostic ceramic typologies with reference to those at Harigaon (Verardi 1992) and Dumakhil (Khanal and Riccardi 2007). We are continuing to develop a full artefactual typology and catalogue that will be linked to these previous excavations and also to our programme of scientific dating. In lieu of this, several special finds provided evidence of the Licchavi occupation of Bhandarkhal including a decorated Red Slipped ware body sherd with a stamped circular motif (Figure 13), very similar to the Pashupati coins with raised dots forming a circle that frames a depiction of a bull in the centre. Similarly, a further decorated body sherd with a stamped design depicted a trident and the head of a bull, as well as four and a half characters of Licchavi script (Figure 14). We also uncovered a Pashupati coin with a depiction of the Yogi (Figure 15). In addition to these finds, we recovered several cylindrical terracotta objects that tapered at one end. Verardi suggested that similar cones found at Harigaon, one of which was associated with a tank, may have been related to offering materials (Verardi 1992: 168). Such a hypothesis requires further investigation and further analysis of the entire artefactual assemblage relating to context and scientific dates.

4.2 Trench 3

After a hiatus of activity due to the Gorkha earthquake of 2015, the team returned to Bhandarkahl in February-March 2016 to undertake further excavations. Trench 3 was located in the southern half of the walled enclosure of Bhandarkhal and was laid out on a north-south alignment at a distance of one hundred metres west of the main gate, perpendicular to the main east-west path. As stated above, geophysical survey had identified several parallel east-west features running across this area and the excavations were targeted at characterising and dating these subsurface features. The trench was initially one metre wide and 30 metres long, running north-south between 60 and 90 metres from the southern edge of the main central east-west path. Only the 20 metre portion between 60 and 80 metres was excavated with the area between 80 and 90 metres subject to surface cleaning. Once archaeological features had been recognised within the slot, the main portion of the trench was extended to horizontally expose structures, resulting in an extension of 15 metres north-south and five metres east to west from the original one metre wide slot at a distance of between 65 and 80 metres from the main east-west path. Additionally, a further one metre east-west by two metres north-south extension was excavated to the east of the original one metre slot on account of the presence of a large architectural block under the west-facing section wall at a distance of between 70 and 72 metres to the south of the main path (Figure 16).

The excavations here successfully exposed the presence of at least three major phases of occupation in the vicinity of the trench. The oldest was encountered at the base of a deep one metre wide section cut into the south-facing section of the extended trench. Excavated in order to fully investigate the stratigraphy of the locality, virgin soil was identified at a depth of 1.83 metres below the surface and the stratigraphy confirmed the presence of earlier human activity in the locality of the trench. Primarily represented by the ceramic-rich fills of a pit cut (Figure 17), the recovery of fragments of brick and tile indicate the nearby presence of early structures. These early levels were then sealed below the next phase of occupation, represented by the construction of a major east-west oriented brick paved platform, measuring at least six metres in width (Figure 18). Although badly robbed, its southern edge was defined by what appeared to be foundations of stone cobbles and its western end by brick wall. A well-constructed stone drain with a stone block bottom ran from the structure in a south-westerly direction (Figure 19). The complex had been badly robbed but the distinct scatter of tile, brick and stone architecture suggested that the structure had been monumental in nature. Following the deposition of silty sands over the robbed remains of the platform, the final occupation comprised the digging of two large post pits after which the site was abandoned (Figure 20).

During the excavations at Trench 3, over 100 special finds were catalogued and undiagnostic brick, ceramics and tile from the excavation trench were bulk-counted and weighed. Much

of the artefactual material related to modern finds in the upper levels, particularly topsoil, with substantial numbers of objects of glass, plastic, metal and even fabric. From secure archaeological deposits, we identified several artefact types comparable to those from Trenches 1 and 2. As in our previous excavations in the vicinity of the tank at the centre of Bhandarkhal, we also recovered a number of cylindrical terracotta objects that tapered at one end. As previously noted, Verardi suggested that similar object from Harigaon may have represented offerings (Verardi 1992: 168), although this is still unconfirmed. A single heavily corroded copper alloy coin was recovered, although whether it is a Pashupati coin will have to await conservation. We also recovered a number of small oil lamps, spouted vessels, stamped sherds, slag, stone mortar and pestles and moulded and carved terracotta objects. In addition, a large quantity of undiagnostic ceramic sherds was recovered as well as 966 fragments of roof tile, weighing 32.231 kilograms. These artefactual findings suggest a similar corpus of artefacts across Bhandarkhal and perhaps the markers of Licchavi material culture, though as noted above, a full artefactual typology and catalogue is being developed to link with previous excavations and also to our programme of scientific dating before any concrete hypotheses can be made.

5. Conclusion

Our preliminary excavations at Bhandarkhal have succeeded in highlighting the presence of earlier archaeological sequences at Pashupati, some of which were characterised by non-durable remains. Whilst waiting for the results of our scientific dating, it is not possible to yet categorically state the dating of these phases but our investigations have begun to characterise the nature of this activity. In Trenches 1 and 3, we found clear evidence of cut pit features. Both areas highlight that activity at Bhandarkhal and, by extension within the Pashupati area, may not always relate to durable monumental architecture. Whilst the pit cut in the tank may be a much later feature, the pit cut in Trench 3 suggests that these features may have formed an earlier architectural characteristic of occupation at the site. In addition, rather than the conforming to architecture seen in the medieval tanks of the Durbar Squares of the Kathmandu Valley, where brick lined tanks are present, the tank at Bhandarkhal had an earthen edge. However, its size suggests that it was still a major undertaking and although not of durable materials, was a major feature of Bhandarkhal. Furthermore, the finds of brick and tile and large fragments of worked stone in Trench 3, also suggest that monumental structures were present within this area of the Pashupati Complex. By extrapolating from the exposed monument in Trench 3 to the results of the geophysical survey, it would seem plausible that much of the now wooded enclosure lies above a series of monumental platforms running east to west with the large tank at its centre.

In addition to our excavations, further archaeological investigations are being undertaken at Bhandarkhal and across Pashupti. The project is multi-disciplinary and over the course of our investigations we have, and will continue to, integrate topographical mapping, geophysical survey, auger coring, geoarchaeology and epigraphic analysis with our systematic excavations and artefactual analysis. Geophysical survey has enabled the identification of areas of archaeological interest and areas that require protection from development. Combined with auger coring, which has facilitated the identification of the depth and spread of cultural material, this has allowed for rapid site assessment that have revealed areas of significant subsurface heritage as well as providing the ability to record general macro-stratigraphic details of the broader site. These surveys have guided our excavations and, as stated above, we are undertaking geoarchaeological analysis of the excavated stratigraphies to date the origins and subsequent phases of development and to assess the relationship between these to local environmental conditions. We will process Optically Stimulated Luminescence (OSL) samples taken from soil stratigraphy to provide absolute scientific dates for key contexts. Thin section micromorphology samples have also been taken to answer key questions relating to site formation processes including the assessment of the change from rural to urban forms of land use as well as providing insights into the emergence and development of tank-based water management at Bhandarkhal and the Kathmandu Valley.

Furthermore, we are undertaking visitor and business surveys to understand the social and economic impacts of Pashupati in the present. We will also map and record epigraphic evidence across Pashupati to understand changing patterns of patronage, providing a historical context to our archaeological investigations. This will also provide additional measurements and photographic records of inscribed and non-inscribed objects dating to the Licchavi period. Rubbings have been taken of newly recorded inscribed objects, and further analysis will be undertaken on the inscriptions, and compiled into a database to aid future management and protection. The combination of these approaches and methodologies will not only shed light on the early occupation and the social and economic character of the site and its development in the past, it will also lead to the devising of an Archaeological Risk Maps for Pashupati, protecting cultural heritage from future development by guiding management of its subsurface archaeology, whilst also providing information on the current social and economic impacts of pilgrimage, tourism and site use to facilitate sustainable development of the site. For instance, the project's Archaeological Risk Map for Bhandarkhal will now be used by the Pashupati Area Development Trust to design the rehabilitation of this area of the site to ensure that amenities are provided to pilgrims and residents whilst protecting the vulnerable subsurface heritage.

Finally, in relation to the aftermath of the 2015 earthquakes, we should also recognise that plans to swiftly reconstruct temples and buildings will necessitate research interventions and excavations to establish evaluate the strength and phasing of foundations. Detailed recording and scientific analysis of these interventions is critical as, discussed above, almost

all published architectural studies of the Kathmandu Valley are focused on standing remains do not contain plans or sections of foundations (Coningham et al. 2016e). We argue that all post-earthquake interventions should be accompanied by archaeological excavations in order to evaluate the sub-surface stability of foundations as well as evaluate and sequence evidence for prior structures at that place. As a result, it is recommended that post-disaster rescue excavations are undertaken within the Pashupati UNESCO World Heritage Site prior to the rebuilding of collapsed structures as well as accompanying the demolition of badly damaged structures in accordance with the Department of Archaeology's newly agreed draft '*Conservation Guidelines for Post 2015 Earthquake Rehabilitation: Conservation Guidelines*' (CGPERCG 2015).

6. Acknowledgements

We would like to acknowledge the support of the following individuals and institutions:

Dr Govind Tandon, Mr Ramesh Kumar Upreti, Mr Taranath Subedi, Mr Bharat Marasini, Mr Sitaram Risel, Mr Rewati Raman Adhikari, Mr Tej Bahadur, Mr Krishna, Mrs Kanchi Tamang and other staff at the Pashupati Area Development Trust; Mr Bhesh Dahal, Ms Manju Singh Bhandari, Mr Bishnu Prasad Pathak and Mr Mohan Singh Lama, Rojendra Sthapit and Shyamsundar Rajbansi of the Department of Archaeology, Government of Nepal; Mr Bharat Mani Subedi; Raju Rimal; Ms Anouk Lafortune-Bernard, Ms Patricia Voke of Durham University; Prof Ian Simpson of the University Ms Nabha Basnyat-Thapa of the UNESCO Kathmandu Office; Mr Ranjan Dulal, Ms Sunita Bhadel, Ms Shanti Sherma, Mr Shivasharan Rajbhandhari, Mr Jagat Bahadur Katuwal, Ms Sunita Hamal, Mrs. Shakuntala Acharya, Mr Urban Coningham, Mr Benjamin Parker, Mr Jay Thapa and Mr Kulnath K.C.

Generous financial assistance for the archaeological investigations was provided by the Pashupati Area Development Trust (Government of Nepal), The British Academy Stein-Arnold Fund and Durham University.

7. References

- Amatya, S. 2007. *Monument Conservation in Nepal: my experience with the World Heritage Sites of the Kathmandu Valley*. Kathmandu: Vajra Publications.
- Amatya, S. 2011. *Archaeological and Cultural Heritages of Kathmandu Valley*. Kathmandu: Ratna Pustak Bhandar.
- Basukala, B, Gutschow, N. and Kayastha, K. 2014. *Towers of Stone: Sikhara Temples in Bhaktapur, Vatsala and Siddhilaksmi*. Kathmandu: Himal Books.

Coningham, R.A.E. 1999. *Anuradhapura: The British - Sri Lankan Excavations at Anuradhapura Salgaha Watta: Volume 1 The Site*. Society for South Asian Studies Monograph Series. Oxford: Archaeopress.

Coningham, R.A.E., Acharya, K.P., Strickland, K., Davis, C.E., Manuel, M.J., Simpson, I., Gilliland, K., Tremblay, J., Kinnaird, T. and Sanderson, D. 2013a. The Earliest Buddhist Shrine: Excavating the Birthplace of the Buddha, Lumbini (Nepal) *Antiquity* 87(338): 1104-1123.

Coningham, R.A.E. and Acharya, K.P. 2013. *Identifying, Evaluating and Interpreting the Physical Signature of Lumbini for Presentation, Management and Long-term Protection: Report of Season Three of Activity Two*. UNESCO Report.

Coningham, R.A.E and Gunawardhana, P. 2013. *Anuradhapura: Volume 3. The Hinterland*. BAR International Series. Oxford: Archaeopress

Coningham, R.A.E., Hale, D., Manuel, M. J., Davis, C.E. and Villis, R.G. 2013b. *Archaeological Risk Assessment Evaluations at the UNESCO World Heritage Sites of Paharpur, Mahasthangarh and Bagerhat*. Report for the Department of Archaeology (Government of Bangladesh) on behalf of the South Asia Tourism Infrastructure Development Project

Coningham, R.A.E., Acharya, K.P. and Manuel, M.J. 2014. *Strengthening Conservation and Management of Lumbini, the Birthplace of the Lord Buddha, World Heritage Property (Phase II): Report of the first (Jan-Feb 2014) season of field activities*. UNESCO Report.

Coningham, R.A.E., Acharya, K.P., Davis, C.E., Kunwar, R.B., Tremblay, J.C., Simpson, I.A. and Schmidt, A. 2016a. Preliminary Results of Post-Disaster Archaeological Investigations at the Char Narayan Temple and within Patan's Durbar Square, Kathmandu Valley UNESCO World Heritage Property (Nepal). *Ancient Nepal* 191-192: 72-92.

Coningham, R.A.E., Acharya, K.P., Davis, C.E., Kunwar, R.B., Simpson, I.A., Schmidt, A. and Tremblay, J.C. 2016b. Preliminary Results of Post-Disaster Archaeological Investigations at the Kasthamandap and within Hanuman Dhoka, Kathmandu Valley UNESCO World Heritage Property (Nepal). *Ancient Nepal* 191-192: 28-51.

Coningham, R.A.E., Acharya, K.P., Davis, C.E., Kunwar, R.B., Tremblay, J.C., Schmidt, A. and Simpson, I. 2016c. Preliminary Results of Post-Disaster Archaeological Investigations at the Vatsala Temple and within Bhaktapur's Durbar Square, Kathmandu Valley UNESCO World Heritage Property (Nepal). *Ancient Nepal* 191-192: 3-27.

Coningham, R.A.E., Acharya, K.P., Davis, C.E., Strickland, K.M., McDonnell, G., Tremblay, J., Manuel, M.J. and Bidari, B. 2016d. Defining the Chronological and Cultural Sequence of Mound V Tilaurakot (Nepal): a report on pilot excavations conducted in 1999. *Ancient Nepal* 190: 18-29.

Coningham, R.A.E., Acharya, K.P., Davis, C.E., Kunwar, R.B., Tremblay, J.C., Schmidt, A., Simpson, I. and LaFortune-Bernard, A. 2016e. Post-Disaster Rescue Archaeological Investigations, Evaluations and Interpretations in the Kathmandu Valley World Heritage Property: Recommendations from a UNESCO mission in 2015. *Ancient Nepal*.

CGPERCG. 2015. *Conservation Guidelines for Post 2015 Earthquake Rehabilitation: Conservation Guidelines 2015 (draft)*. Kathmandu: Department of Archaeology.

Davis, C.E., Coningham, R.A.E., Acharya, K.P., Simpson, I.A., Tremblay, J., Kunwar, R.B., Manuel, M.J., Krishna Bahadur, K.C. and Bidari, B. 2016. Re-investigating Tilaurakot's Ancient Fortifications: a preliminary report of excavations through the northern rampart (Nepal). *Ancient Nepal* 190: 30-46.

Di Castro, A.A. 1997. Appendix: Exhibition on the works carried out by the Italian team from 1984-1995. In Verardi, G., Di Castro, A.A. and Garbini, R. (ed.) *Nepalese and Italian Contributions to the History and Archaeology of Nepal*: 133-145. Rome: ISIAO.

Gutschow, N. 1997. *The Nepalese Caitya: 1500 years of Buddhist votive architecture in the Kathmandu Valley*. Stuttgart.

Gutschow, N. 2011. *Architecture of the Newars: a History of Building Typologies and Details in Nepal*. Chicago: Serindia Publications.

Hutt, M. (ed.). 1994. *Nepal: A guide to the art and architecture of the Kathmandu Valley*. Stirling: Kiscadale Publications.

Joshi, H. 1974. *Ancient Inscriptions of Nepal*. Kathmandu: Royal Nepal Academy.

Khanal, M.P. and Riccardi, T. 2007. *Archaeological Excavation in the Kathmandu Valley: A Report on the 1984-85 and 1988-89 Seasons at Dumakhal*. Harvard: Harvard Oriental Series.

Korn, W. 2007 (second Edition). *The Traditional Architecture of the Kathmandu Valley*. Kathmandu: Ratna Pustak Bhandar

Korn, W. 2014. *The Traditional Newar Architecture of the Kathmandu Valley: the Shikaras*. Kathmandu: Ratna Pustak Bhandar.

Michaels, A. 2008. Śiva in Trouble: *Festivals and Rituals at the Pashupatinatha Temple of Deopatan*. Oxford: OUP

Michaels, A. and Tandon, G. 1994. Deopatan and the Temple of Pashupati. In Hutt, M. (ed.) *Nepal: A guide to the art and architecture of the Kathmandu Valley*: 180- 195. Stirling: Kiscadale Publications.

Mirnig, N. 2013. Favoured by the Venerable Lord Pashupati. Tracing the Rise of a new Tutelary Deity in Epigraphic Expressions of Power in Early Medieval Nepal. *Indo-Iranian Journal* 54(3/4): 325-347.

Regmi, D. 1965. *Ancient Nepal*. New Delhi: Rupa and Co.

Regmi, D. 1983. *Inscriptions of Ancient Nepal*. New Delhi: Abhinav Publications.

Strickland, K.M., Coningham, R.A.E., Acharya, K.P., Schmidt, A., Simpson, I.A., Kunwar, R.B., Tremblay, J., Manuel, M.J., Davis, C.E., Krishna Bahadur, K.C. and Bidari, B. 2016. Ancient Lumminigame: A Preliminary Report on Recent Archaeological Investigations at Lumbini's Village Mound (Nepal). *Ancient Nepal* 190: 1-17.

Slusser, M.S. 1982. *Nepal Mandala: a cultural study of the Kathmandu Valley*. Princeton: Princeton University Press.

Tiwari, S.R. 2001. *The ancient settlements of the Kathmandu Valley*. Kathmandu: Centre for Nepal and Asian Studies, Tribhuvan University

TPU 2003a. News from Nepal. *The Past Uncovered*. February 2003: 2

TPU 2003b. Asia Urbs Project. *The Past Uncovered*. October 2003: 4

Veradi, G. 1992. *Excavations at Harigaon Kathmandu*. Rome: IsMEO

Figures



Figure 1: Main monument zone of Pashupati, looking across the Bagmati River towards the Pashupati Temple.



Figure 2: General view across Bhandarkhal.



Figure 3: Trench locations, geophysical results and topographic map of Bhandarkhal.



Figure 4: Geophysical interpretation of Bhandarkhal.

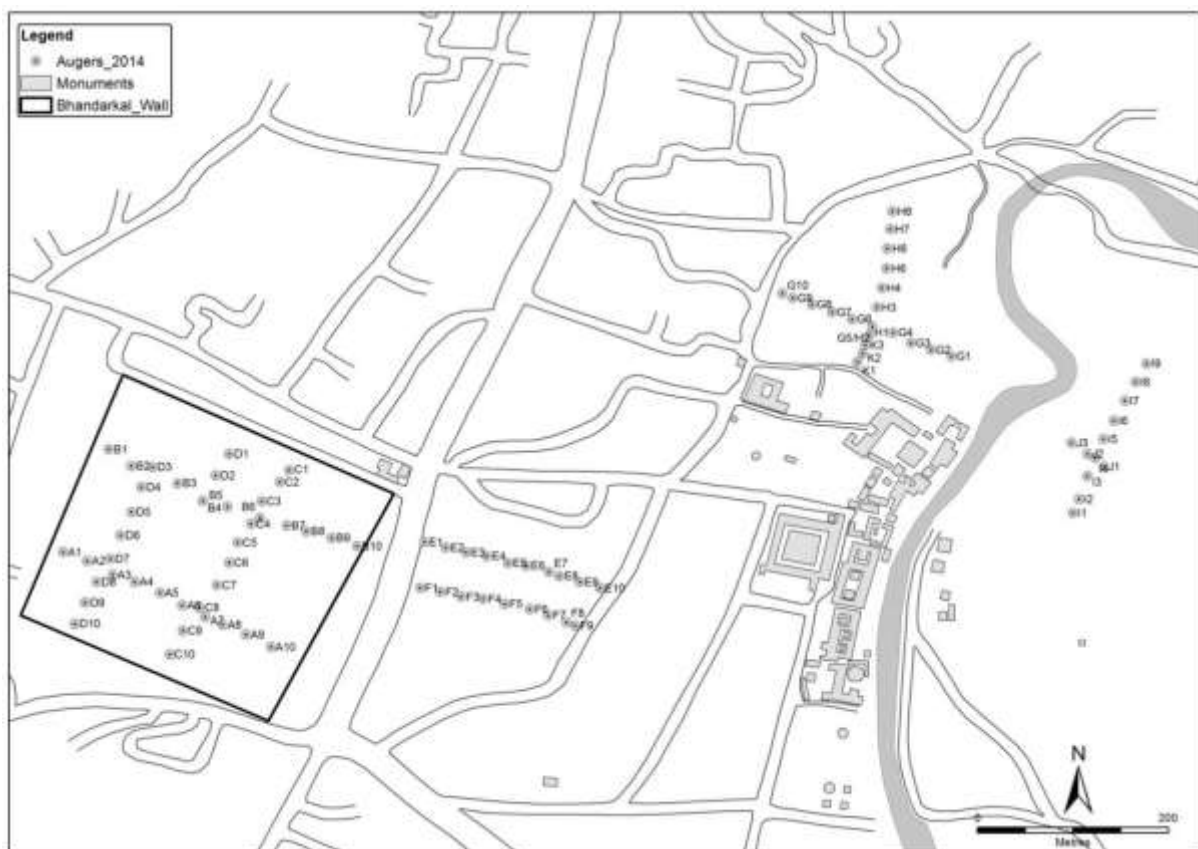


Figure 5: Location of auger core transects across Pashupati.



Figure 6: Pit cut with three fills in Trench 1.



Figure 7: Brickbat platform within Trench 1, west of the later north-south wall.

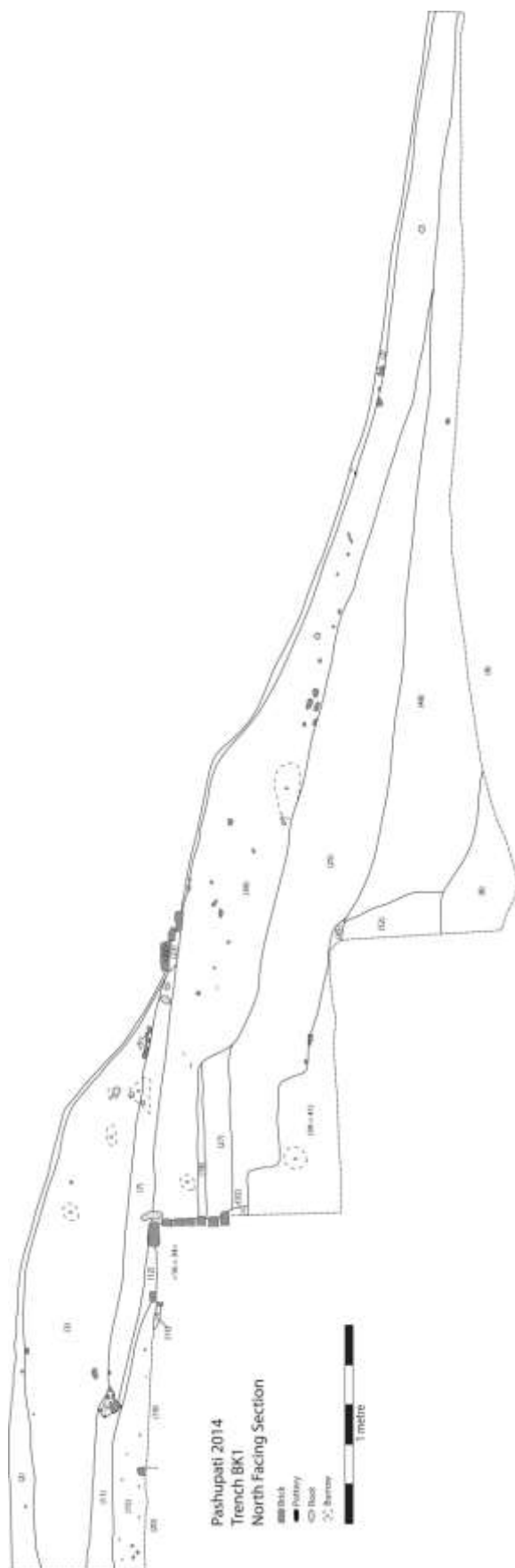


Figure 8: North facing section of Trench 1, showing stepped tank edge and later infills.



Figure 9: North-south wall, also showing ceramic vessels within the wall cut fill, and brick balustrade in Trench 1.

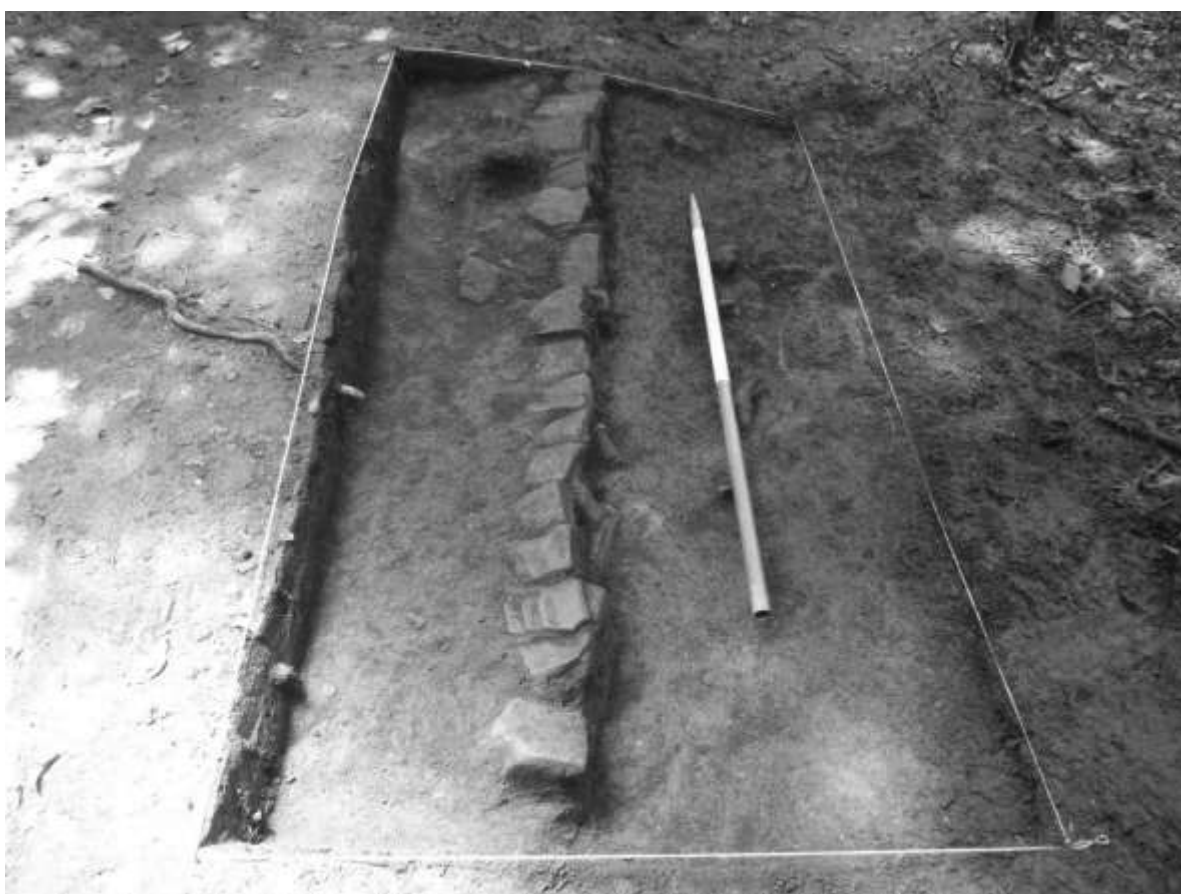


Figure 10: Ephemeral alignment constructed from brick and tile in Trench 2.



Figure 11: North-south wall alignment in Trench 2

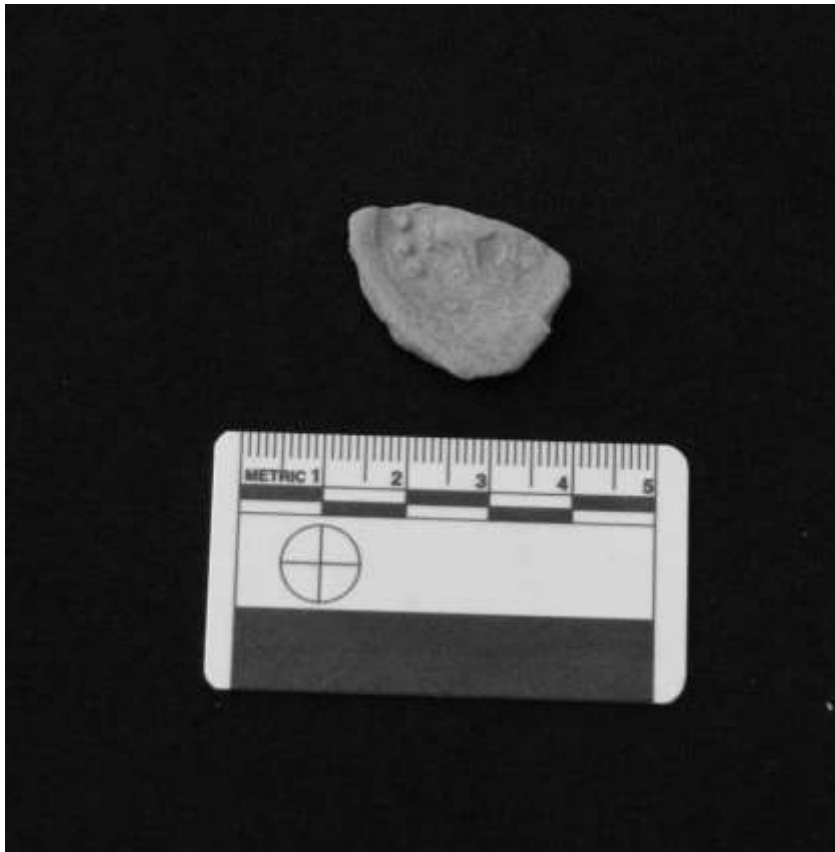


Figure 13: A stamped Red Slipped ware sherd of pottery depicting a bull within a circular motif

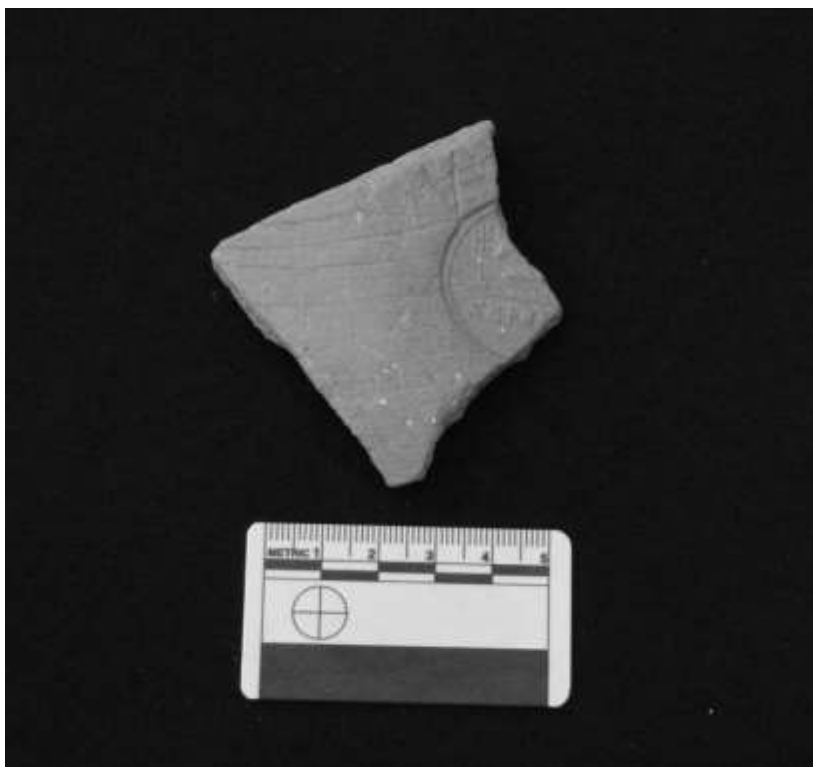


Figure 14: A stamped red ware body sherd depicting a bull and a trident as well as four and a half characters of Licchavi script within a circle.

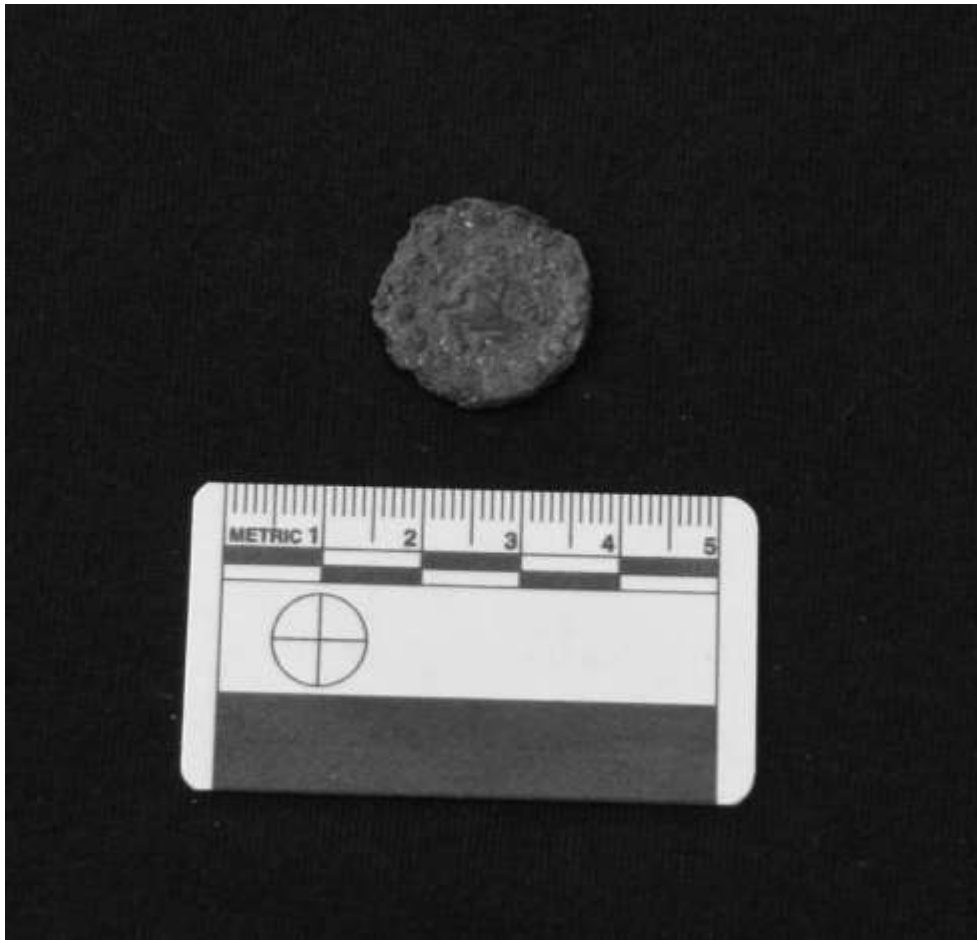


Figure 15: A Pashupati coin depicting the Yogi.



Figure 16: Trench 3, looking south.



Figure 17: Pit cut in west facing section of Trench 3



Figure 18: View of paving and stone lined drain in Trench 3, looking west.



Figure 19: Detail of stone lined drain looking west.



Figure 20: Post pits in the final phases of occupation identified in Trench 3.